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ON THE SHELTER PLACES OF BLOOD SUCKING BITING MIDGES (DIPTERA: CERATOPOGONIDAE)  
CULICOIDES AND LEPTOCONOPS IN THE STEEP ZONE OF THE UKRAINE

by

V.V. Dubrovskaya

Source: O mestakh ukrytii krovososushchikh mokretsov (Diptera, Ceratopogonidae)  
Culicoides Leptoconops v stepnoi zone ukrainy. Meditsinskaia parazitologia i parazitarnye bolezni, v. 45, no. 5, 1976, p. 580-583.

Translated from Russian

by

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for

USDA, ARS/SR  
Gainesville, FL

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Translated from Russian:

On the Shelter Places of Blood Sucking Biting Midges (Diptera: Ceratopogonidae)  
Culicoides and Leptoconops in the Steep Zone of the Ukraine.

V. V. Dubrovskaya of the Donetsk Medical Institute  
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Translator's code:

(...?)=literal translation but meaning is unclear

((...?))=transliteration of word, phrase or abbreviation not available in Russian-English  
technical dictionary - presented in the hope that its meaning (if a cognate to  
English) may be clear to the scientist reading the paper.

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A study of the shelter places of blood sucking biting midges in periods which were unfavorable for flight and attack, has some significance for investigations of their ecology and organization of rational methods of struggle with the imago.

A series of investigations in the Soviet Union studied the places of daytime rest of biting midges in various landscape-geographical zones. Places of daytime shelter included trees, bushes, grassy vegetation, holes in the ground, radical pits, hollow trees, animal breeding stations.

Ch. Y. Remm (1955), H. P. Krishoveina (1956), A. K. Shevchenko (1971) treat the basic places of daytime shelter in the forest zone conditions of Estonia, Moscow and Ryazansky regions and the Ukrainian Woodland tree vegetation. Other authors (V.M. Gluchova, 1962; N.P. Glushenko, 1969)--grassy vegetation (in Karely, taiga of the upper Leni basin). A very detailed study of places of daytime shelter was provided by A.G. Mirzaeva and N.P. Glushenko (1972) in various landscape zones of Siberia. It was established that in forest regions biting midges primarily take shelter in the crowns of trees, and in mountainous regions of the forest zone--in bushes on the shores of reservoirs, in grassy and mossy cover. In forest-steppe zones, the places of shelter appear to be thickets of bushes and tree vegetation in river flood lands.

In the southern regions of the country daytime shelter of biting midges was investigated by Sh. M. Dzhaferozim (1964) in Zakavkaz, Wh. M. Muradov (1966), L. R. Babadzhanova (1967) in the republics of Central Asia, and M.S. Shakirzyanova (1963, 1972) in Kazakhstan. Daytime shelter places here include grass, bush, tree vegetation. Apart from them, also mentioned as places of daytime shelter are mammal burrows, hollows in the ground (Sh. M. Dzhaferov, 1964), sandy burrows, birds' nests (M. S. Shikirzyanova, 1962), animal breeding stations (Sh. M. Muradov, 1966).

We carried out investigations of shelter places of biting midges in 1968-1971 in the flood lands and hills of the rivers of Northern Donets, Kazenny Torets, Bachmut, Gruzsky Elanchik, on Azovsky shore and between the rivers of the Northern Donsa and the Kazenny Tortsa within the borders of the Donetsk region.

#### Material and Methods

In quality, the method of investigation used (cochineal?) entomological butterfly net for grassy vegetation, bushes, crowns of trees. Apart from that, we used sheets of fly paper, measuring 15 x 20 cm, greased with castor oil which were hung in the crowns of trees, in animal breeding stations, in nests of sand martins and starlings. During the period of the investigation more than a thousand were caught with nets, resulting in a collection of more than 140 examples of biting midges. On the fly paper at 50 animal breeding stations, 1435 specimens were caught. In the starling nests were found 18 specimens, in the sand martin nests no biting midges were discovered. In the crowns of trees and bushes, blood sucking biting midges were not found despite the multiple collections carried out. At the same time, in the grass, during the day time hours, there were discovered 8 species of biting midges Culicoides and Leptoconops borealis: C. pulicaris (25 specimens) in the meadows of Northern Donsa and in the settlements of Koska and Priazov. There were also found day time shelters of C. subfascipennis (5 specimens), C. riethi (19 specimens), and in the village of Melekino-- L. borealis (15 specimens). In the flood lands of the Northern Donsa were picked up C. reconditus (8 specimens) in the day time shelters, as well as C. vexans (13 specimens), C. maritimus (15 specimens), C. machardy (22 specimens), and in the flood land of the river Gruzsky Elanchik-- C. alazanicus (18 specimens). In the collections of biting midges carried out in daytime hours, isolated individuals were caught, attacking animals on the head and lower parts of the leg. Especially during the hours of predominant activity, biting midges were encountered in significant quantity.







## Results

Analysis of our material and the data of other authors who investigated daytime shelters in the steppe zone of the USSR, indicates that places of shelter are found in grassy vegetation. Our observations, during the course of a day, indicated that isolated collections of biting midges (caught with cochineal?) in the grass and in day time hours cannot serve as examples of their numbers, since in the period before attack activity the collections of biting midges on such sites, but with animals, were already very numerous. An analogous phenomenon was noted in Karely (V.M. Gluchova, 1962). Usually authors write about daytime shelter of biting midges, however in the night time hours biting midges most often are not active, or hardly active and grassy cover serves them as shelter during the night. According to V. M. Gluchova's (1956) around the clock calculation of biting midges from horses with application of sticky (?) to the feet showed the influence of attack, by way of crawling, as much in full darkness as, by moonlight. Attack in darkness was noted as well by I.S. Amosova (1956). It follows from that that at night and during the day biting midges conceal themselves in grassy cover which is not very high in the steppe zone. For this layer of vegetation, a sharp daily fluctuation of both temperature and dampness is characteristic. From the emerging dew, dampness is always very high on the grass but it is sharply lowered in the ground which is strongly insulated. Consequently, in the conditions of the steppe zones of the Ukraine in the period of absence of activity, there exist methods of transmitting the sharp fluctuation of temperature and dampness. It may be supposed that in steppe species, the capacity of transmitting sharp overfalls of moisture, spiracular index is shown to be extremely low.

All the observed places of shelter belong to natural stages. But in separate works (Sh. M. Muradov, 1966; N.S. Zhuk, 1967; P.A. Petrischeva, 1962; A. K. Shevchenko, 1971) point out such places of day time shelter as rodent burrows, bird nests, animal breeding stations. This question demands very detailed study. However, it is impossible to exclude the fact that in these biotopes, biting midges may fly far away for food on animals and birds. Examination of animal breeding stations, dwellings and part artificial nests allowed us to establish that in the steppe conditions of the Ukraine they do not appear to be places of day time shelter. If animal breeding stations were free from animals in the summer, then biting midges there, despite thoroughness and non-momentary searches, were not encountered. On those farms where animals are found in the summer in lodgings, biting midges are only encountered where windows were glazed, since, after being saturated with blood, biting midges usually fly away through open windows. The location of biting midges in human dwellings is linked, as has been shown with their attraction to light. In uninhabited bird nests, there also were no biting midges. All this leads to the conclusion that places of shelter of biting midges serve only as natural stages and finding them in animal dwellings and human habitations appears to be a result of their attraction to prey or to light.

## Conclusions

1. The study of daytime shelter of biting midges and analysis of the literature in regard to this question showed that in the steppe zone, in particular within the borders of the Donetsk region, places of daytime cover of these blood suckers in unfavorable periods of the day appear to be grassy and, rarely, bushy vegetation.

2. Adult biting midges in the period of absence of activity may reflect sharp fluctuation of temperature and moisture, characteristic of the steppe zone of the Ukraine.

3. The conclusions of a series of authors that animal stations and dwelling places serve as daytime shelter places for biting midges, appear to us to be mistaken. Careful study in the steppe zone of the Ukraine indicated that biting midges either penetrate lodgings to parasitize animals, or accompany these animals from the pasture, or fly toward electric light.







## Literature

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